

IN THE CLAIMS:

Please amend claims 1, 5, 6, 18 and 19 as follows:

1. (Currently amended) A method for the optical inspection of a transparent protective layer and of a colored patterned surface, whereby the transparent protective layer at least partially covers the colored patterned surface, said method using a first source of illumination and a first imaging sensor associated with the first source of illumination, said method comprising the steps of:

illuminating said protective layer with light emitted by the first source of illumination in order to recognize defective places inside and beneath the transparent protective layer, said first source of illumination emitting shortwaved light in the range that is visible for the first imaging sensor and that is at least partially diffuse, the light striking said surface penetrating at least partially into the protective layer and scattering at the defective places;

picking up light scattered back from the defective places with the first imaging sensor;
and

recognizing the defective places by the local increase in the intensity of the light picked up by the first imaging sensor in the area of the defective places.

2. (Previously presented) The method according to Claim 1, wherein the first imaging sensor associated with the first source of illumination is essentially only sensitive to light emitted in the wavelength range of the first source of illumination.

3. (Previously presented) The method according to Claim 1, wherein the first source of illumination and the first imaging sensor associated with the first source of illumination are arranged perpendicularly above the surface of the transparent protective layer.

4. (Previously presented) The method according to Claim 1, wherein the defective places in the transparent protective layer are turbid places.

5. (Currently amended) A method for the optical inspection of a transparent protective layer and of a colored patterned surface, whereby the transparent protective layer at least partially covers the colored patterned surface, said method using a first source of illumination and a first imaging sensor associated with the first source of illumination, said method comprising the steps of:

illuminating said protective layer with light emitted by the first source of illumination in order to recognize defective places inside and beneath the transparent protective layer, said first source of illumination emitting shortwaved light in the range that is visible for the first imaging sensor, the light striking said surface penetrating at least partially into the protective layer and scattering at the defective places;

picking up light scattered back from the defective places with the first imaging sensor;
and

recognizing the defective places by the local increase in the intensity of the light picked up by the first imaging sensor in the area of the defective places;

~~The method according to Claim 1, wherein~~ the light emitted by the first source of illumination is being imaged in the form of a line on the surface of the transparent protective layer and the widening of the line caused by the back-scattered light in the area of the defective places is being detected on the surface of the protective layer by the first imaging sensor.

6. (Currently amended) A method for the optical inspection of a transparent protective layer and of a colored patterned surface, whereby the transparent protective layer at least partially covers the colored patterned surface, said method using a first source of illumination and a first imaging sensor associated with the first source of illumination, said method comprising the steps of:

illuminating said protective layer with light emitted by the first source of illumination in order to recognize defective places inside and beneath the transparent protective layer, said first source of illumination emitting shortwaved light in the range that is visible for the first imaging

sensor, the light striking said surface penetrating at least partially into the protective layer and scattering at the defective places;

picking up light scattered back from the defective places with the first imaging sensor;

recognizing the defective places by the local increase in the intensity of the light picked up by the first imaging sensor in the area of the defective places;

~~The method according to Claim 1, wherein providing~~ a second source of illumination is ~~provided~~ that emits light at a first wavelength that excites the protective layer to fluoresce with light at a second wavelength that is different from the first wavelength, the fluorescent light is being picked up by a second imaging sensor associated with the second source of illumination, and defective places in the transparent protective layer ~~are~~ being recognized on the basis of local changes in the intensity of the fluorescent light.

7. (Previously presented) The method according to Claim 6, wherein the second imaging sensor associated with the second source of illumination has greater sensitivity in the wavelength range of the second wavelength than in the wavelength range of the first wavelength.

8. (Previously presented) The method according to Claim 6, wherein the light emitted by the second source of illumination is imaged in the form of a line on the surface of the transparent protective layer and the change in the intensity of the line on the surface of the transparent layer caused by changes in the intensity of the fluorescent light is detected by the second imaging sensor.

9. (Previously presented) The method according to Claim 6, wherein the defective places are areas on the colored patterned surface which are not covered by the transparent protective layer.

10. (Previously presented) The method according to Claim 6, wherein a single source of illumination is employed as the first source of illumination and as the second source of illumination.

11. (Previously presented) The method according to Claim 1, wherein color defects in the colored patterned surface are detected by a color-capable imaging sensor.

12. (Previously presented) The method according to Claim 6, wherein, in order to detect defects on the surface of the transparent protective layer, a third source of illumination emits a directed beam of light that is reflected off the surface of the protective layer, said reflected light being picked up by a third imaging sensor associated with the third source of illumination, and the defects on the surface of the transparent protective layer are recognized on the basis of changes in the intensity of the light picked up by the third imaging sensor.

13. (Previously presented) The method according to Claim 12, wherein said first, second and third imaging sensors with their associated sources of illumination are shielded from each other.

14. (Previously presented) The method according to Claim 13, wherein said first, second and third imaging sensors with their associated sources of illumination are shielded from each other in that they operate at different, non-overlapping wavelength ranges.

15. (Previously presented) The method according to Claim 14, wherein a single source of illumination is employed as the first source of illumination and as the second source of illumination and said single source of illumination and the third source of illumination emit light in different, non-overlapping wavelength ranges and the first and third imaging sensors associated with the first and third sources of illumination are sensitive in different, non-overlapping wavelength ranges.

16. (Previously presented) The method according to Claim 1, wherein the colored patterned surfaces and the transparent protective layer are parts of laminate floor covering elements, whereby these laminate floor covering elements comprise wood or plastic substrate elements onto which multi-colored printed films with a colored patterned surface are arranged and which are covered by a transparent protective layer.

17. (Previously presented) The method according to Claim 1, wherein the surface of the transparent protective layer is provided with an embossed structure.

18. (Currently amended) An arrangement for the optical inspection of a transparent protective layer and of a colored patterned surface, whereby the transparent protective layer at least partially covers the colored patterned surface, said arrangement comprising a first source of illumination and a first imaging sensor associated with the first source of illumination, the emission spectrum of the first source of illumination encompassing shortwaved light that is visible for the first imaging sensor and said source of illumination being configured so as to emit light that is at least partially diffuse, the first imaging sensor picking up light scattered back from defective places inside and beneath the transparent protective layer, and the defective places can be recognized by the local increase in the intensity of the light picked up by the first imaging sensor in the area of the defective places.

19. (Currently amended) An arrangement for the optical inspection of a transparent protective layer and of a colored patterned surface, whereby the transparent protective layer at least partially covers the colored patterned surface, said arrangement comprising a first source of illumination and a first imaging sensor associated with the first source of illumination, the emission spectrum of the first source of illumination encompassing shortwaved light that is visible for the first imaging sensor, the first imaging sensor picking up light scattered back from defective places inside and beneath the transparent protective layer, whereby the defective places can be recognized by the local increase in the intensity of the light picked up by the first imaging sensor in the area of the defective places. ~~The arrangement according to Claim 18, wherein a second source of illumination is arranged at a distance from the transparent protective layer to be inspected, the second source of illumination emitting light at a first wavelength that excites the protective layer to fluoresce with light at a second wavelength that is different from the first wavelength, and a second imaging sensor associated with the second source of illumination arranged in such a way that it can pick up the fluorescent light of the protective layer, whereby defective places in the transparent protective layer can be recognized by local changes in the intensity of the fluorescent light.~~

20. (Previously presented) The arrangement according to Claim 18, wherein a color-capable imaging sensor is provided for detecting color defects in the colored patterned surface.

21. (Previously presented) The arrangement according to Claim 19, wherein a third source of illumination is arranged at a distance from the transparent protective layer to be inspected and a third imaging sensor associated with the third source of illumination is arranged at a distance and at the same angle as the third source of illumination in terms of the protective layer to be inspected, said third imaging sensor, for purposes of detecting defects on the surface of the protective layer, picks up the light that has been emitted by the third source of illumination and that has been reflected off the surface of the protective layer.

22. (Previously presented) The arrangement according to Claim 21, wherein a color-capable imaging sensor is provided for detecting color defects in the colored patterned surface and said color-capable imaging sensor, said first and third imaging sensors with their associated sources of illumination are optically shielded from each other.

23. (Previously presented) The arrangement according to Claim 19, wherein a color-capable imaging sensor is provided for detecting color defects in the colored patterned surface.